REMARKS

Applicants have carefully reviewed the final Office Action mailed October 5, 2007, and thank Examiner Siedler for the detailed review of the pending claims. Claims 1-12 and 13-31 are pending. At least for the reasons set forth below, Applicants respectfully traverse the rejections below. Further, Applicants believe that there are also reasons other than those set forth below why the pending claims are patentable, and reserves the right to set forth those reasons, and to argue for the patentability of claims not explicitly addressed herein, in future papers. Applicants respectfully request reconsideration of the present application in light of the remarks below.

I. The Finality of the Office Action is Improper and Should Be Withdrawn Because the Claim Amendments Made Were Only Including Dependent Claim Subject Matter in Independent Claims

At the outset, Applicants note that MPEP 706.07(a) provides a "second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c)..." MPEP 706.07(a) further provides that a "second or any subsequent action on the merits in any application or patent involved in reexamination proceedings should not be made final if it includes a rejection, on references not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed. See MPEP §904 *et seq.*"

Applicants note that the Examiner first rejected this Application in the non-final Office Action dated April 17, 2007, relying specifically on Liu ("Fast Speaker Change Detection for Broadcast News Transcription and Indexing," The Proceedings of Eurospeech 1999, Budapest, Hungary; hereinafter "Liu"), Leung ("A Comparative Study of Signal Representations and Classification Techniques for Speech Recognition," I.E.E.E. International Conference on Acoustics, Speech and Signal Processing, ICASSP'93 27-40 Apr, 1993, vol. 2, pages 680-683; hereinafter "Leung"), and Colbath ("Spoken Documents: Creating Searchable Archives from

Continuous Audio," Proceedings of the 33rd Hawaii International Conference on System Sciences 2000; hereinafter "Colbath") to reject the pending claims. *See Office Action dated 4/16/2006, pages 2-16.* In particular, the Examiner relied upon Liu in rejecting independent claims 1, 10, and 28 under 35 U.S.C. §102(b), and in part upon Liu in combination with Leung in rejecting independent claims 16 and 23, and dependent claims 2 and 13 under 35 U.S.C. §103(a). In response, Applicants amended independent claims 1, 10, 16, and 28 with subject matter originally contained in dependent claims 2 and 13. Independent claim 23 was not amended, as it already included the subject matter incorporated into the other independent claims from dependent claims 2 and 13. Accordingly, the amendments did not raise any new issues requiring further search or consideration. Applicants also noted that the subject matter newly added to independent claims 1, 10, 16, and 28 was taken directly from dependent claims 2 and 13, to point out that the Office Action had already searched and considered the subject matter of independent claims 1, 10, 16, and 28 as amended, and independent claim 23 as originally filed. *See Amendment dated 7/16/2007, pages 12-13.* The substance of Applicants' response pointed out, among other issues, that the references, and Leung in particular, failed to teach or suggest the subject matter of dependent claims 2 and 13 that was incorporated into independent claims 1, 10, 16, and 28, and already present in independent claim 23.

The Examiner has now cited a reference not previously cited or otherwise made of record, U.S. Patent No. 5,475,702 to Stanford (hereinafter "Stanford"), in his rejection of each of the independent claims. More specifically, for each of independent claims 1, 10, 16, 23, and 28, the Examiner has relied upon at least Liu and Stanford in combination under 35 U.S.C. §103(a). Moreover, the Office Action now relies upon Stanford for the subject matter originally existing in dependent claims 2 and 13, and independent claim 23. Thus, the Examiner has, by withdrawing the rejection based in part upon Leung and relying in part upon Stanford for the same subject matter, acknowledged the deficiency of the previous rejection that relied in part upon Leung, and attempted to correct the deficiency with a new reference.

Applicants respectfully submit that a final rejection is premature where, as in the pending Application, an independent claim has been amended in response to a rejection with subject

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matter previously pending as a dependent claim. Applicants added no new subject matter whatsoever for search or consideration by the Examiner by way of their Amendment, and the Examiner had previously considered the subject matter of dependent claims 2 and 13 in the Office Action dated April 16, 2007. At a minimum, the Examiner could have expected that any one of the dependent claims might be incorporated into an independent claim in order to traverse the rejection. The finality of the present Office Action practice works an undue hardship upon Applicants in light of the fact that the previous response merely pointed out the deficiency of the previous rejection, and the present response is the first opportunity for Applicants to evaluate and respond to the Stanford reference in particular. Accordingly, reconsideration and withdrawal of the finality of the rejection is respectfully requested.

II. Rejections Pursuant to 35 U.S.C. §103

Claims 1-12, 14-22, and 28-31 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Liu in view of Stanford. Claims 23-27 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Liu in view of Stanford, and in further view of Colbath. These rejections are respectfully traversed.

A.   **Independent Claims 1, 10, 16, 23, and 28:** *"based on bandwidth " and "a non-phoneme based bandwidth class"*

The references of record fails to teach or suggest "at least one model for classifying the sound in the audio signal based on bandwidth," as recited in part by independent claims 1 and 28, "training at least one model to classify the sound based on a bandwidth of the sound," as recited in part by independent claim 10, "models that classify the portions of the audio signal based on bandwidth," as recited in part by independent claim 16, or "audio classification logic configured to classify the input audio data into at least one of a plurality of broad audio classes, the broad audio classes including... a non-phoneme based bandwidth class," as recited by independent claim 23. More specifically, the Office Action's addition of the Stanford reference does not rectify the shortcomings of the previous rejection.

As in the previous Office Action, the Examiner acknowledged that Liu fails to teach or suggest classification according to bandwidth of a sound. *See Office Action dated 10/5/2007, page 5*. The Examiner now relies on Stanford for the above-quoted elements of the independent claims, stating:

> Stanford discloses a speech recognition system that enables recognition of high bandwidth or telephony (low bandwidth) speech signals (column 2 lines 30-32 and column 8 lines 36-44). Stanford discloses that low bandwidth speech reduces the accuracy of speech recognizers (column 3 lines 37-39), and discloses a system that trains and uses a two separate codebook and phoneme models, one for low bandwidth speech and one for high bandwidth speech (column 8 lines 36-44) to increase the recognition accuracy of low bandwidth input. In addition, Liu attempts to provide a speaker change detection system which improves speaker change detection, speech recognition accuracy, and speed (Abstract).
>
> Therefore, it would have been obvious to one or ordinary skill in the art at the time of the invention to classify the sounds in the audio signal based on bandwidth in Liu, since one of ordinary skill in the art has good reason to pursue the options within his or her technical grasp to achieve the predictable results of improving speech recognition accuracy while maintaining low processing time.

See Office Action dated 10/5/2007, page 5. However, the passages of Stanford referenced above by the Examiner merely observe that "bandwidth reductions and noise introduced by telephone lines reduce the accuracy of all speech recognition systems." *See Stanford, Col. 3, lines 37-39*. Stanford solves this accuracy problem with a method that trains a voice recognition system for narrower-bandwidth applications such as telephony by simulating the effects of a telephone system on a sample sound stream. *See Stanford, Col. 12, line 44 – Col. 13, line 11*. Stanford thus merely employs a method for increasing the accuracy of voice recognition systems for narrower-bandwidth applications, and has nothing to do with classification of sounds or, more specifically, "at least one model for classifying the sound in the audio signal based on bandwidth," as recited in part by independent claims 1 and 28, "training at least one model to

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classify the sound based on a bandwidth of the sound," as recited in part by independent claim 10, "models that classify the portions of the audio signal based on bandwidth," as recited in part by independent claim 16, or "audio classification logic configured to classify the input audio data into at least one of a plurality of broad audio classes, the broad audio classes including... a non-phoneme based bandwidth class," as recited by independent claim 23. The Examiner's conclusion that "it would have been obvious to one or ordinary skill in the art at the time of the invention to classify the sounds in the audio signal based on bandwidth in Liu, since one of ordinary skill in the art has good reason to pursue the options within his or her technical grasp to achieve the predictable results of improving speech recognition accuracy while maintaining low processing time" assumes that Stanford is relevant to classification of a sound based on bandwidth. Stanford simply discloses a method for use only in narrower-bandwidth applications, and does not "classify" any sound based upon its "bandwidth." Accordingly, independent claims 1, 10, 16, 23, and 28 are allowable over the references of record for at least the above reasons.

Moreover, one of skill in the art at the time the invention was made would not have combined the references relied on by the Examiner in order to re-create the arrangement of claims 1, 10, 16, 23, and 28. The Examiner's re-creation of the arrangements recited in the independent claims requires adding at least one additional classification model, specifically at least a bandwidth-based model, to the various phoneme-based models employed by Liu. However, this is at cross purposes with the teachings of Liu. The entire thrust of Liu is directed to increasing speed of a voice recognition system by employing a reduced phoneme class inventory having 4 broad phoneme-based classes and 4 non-speech classes, as compared with a 91-class base model. *See Liu; Abstract lines 5-12; and Section 3: "Phone-Class Decode."* By employing a reduced number of phone and non-speech classes, Liu increases decoding speed by approximately 30 times over the base algorithm. *See Liu, Section 5: "Speed."* While the Examiner correctly points out Liu's claims that accuracy is improved with the proposed model, this argument merely underscores Liu's teachings of the *advantages* of employing fewer classes for speech classification. *See Office Action dated 10/5/2007, pages 2-3.* Liu teaches a reduced

number of classes for non-speech events, resulting in greater speed *and* accuracy, *thereby providing an additional reason for **not** adding additional classes*, e.g., a bandwidth-based class, to the model proposed by Liu. In other words, if the model proposed by Liu using fewer classes is not only faster, but also more accurate, there could not possibly be any motivation for adding additional classes. In fact, the only motivation that can be found for adding additional parameters for classifying sounds is that taught in Applicants' specification. Accordingly, independent claims 1, 10, 16, 23, and 28 are allowable over the references of record for at least these additional reasons.

B.   Independent Claim 23: "...*non-phoneme based gender class...*"

In addition to the reasons cited above for the allowability of claim 23 over the references of record, the references of record additionally teaches away from employing a "non-phoneme based gender class," also recited by independent claim 23. More specifically, Liu discourages the use of gender-dependent models. For example, in regard to the baseline gender-dependent models, Liu states that

> ...there are some drawbacks. There are some cases in which a sequences {sic} of gender errors are made on short segments in particular. Background noise may also affect the gender detection. This makes the output gender labels somewhat noisy and some complicated heuristic rules are needed to smooth the results before they can be useful. The 91-phone baseline decoder is also quite slow.

See Liu, Section 3: paragraph 3, lines 9-15.

The Examiner stated that the "system of Liu uses a gender independent approach to the class decode, however Liu also discloses that, 'gender difference would be easily detected with speaker change detection where not only the gender by also other speaker features are utilized to detect the difference. Doing so we can avoid using any complicated heuristic rules that may not be robust' (section 3 Phone-class decode)." *See Office Action dated 10/5/2007, page 3, quoting Liu, Section 3: "Phone-Class Decode."* However, this passage of Liu is an admonition *against* employing gender-based classes. More specifically, this passage of Liu highlights that with the

proposed model of Liu, classifying based upon gender is not necessary, and actually adds significant complexity to the model that requires "complicated heuristic rules that may not be robust" in order to work properly. Liu thus directly teaches away from a "non-phoneme based gender class." Accordingly, independent claim 23 is allowable over the references of record for at least the above additional reasons.

C.   Dependent Claims

The dependent claims, by depending from independent claims 1, 10, 16, 23, and 28, are believed to be allowable over the references of record. Moreover, the dependent claims recite independently patentable subject matter. Merely by way of example, the references of record, and in particular Liu, specifically teaches away from classifying sound "based on speaker gender," as recited in claims 2 and 19, and "based on gender of a speaker," as recited in claim 14. As described above in regard to independent claim 23, Liu discourages employing gender-based classification models because they require complicated heuristics to provide adequate robustness. *See Liu, Section 3: paragraph 3, lines 9-15.* Accordingly, the dependent claims are allowable over the references of record for at least the above reasons.

CONCLUSION

All rejections have been addressed. In view of the above amendments and remarks, Applicants believe the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. 65632-0233 from which the undersigned is authorized to draw.

Dated: December 5, 2007

Respectfully submitted,

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